	Western Cape	Sao Paulo	Rotterdam	Bristol
ULL: Main Components				
Main Geographic Focal Point	The Water Hub	UNICAMP - University of Campinas	Erasmus University / BlueCity Lab	Avonmouth Waste-water Treatment Works
ULL Boundary	Peri-urban	City-Region	Incubation Hub	City-Region
Wider Population (City/Region)	17 000 (formal and informal settlem	12 million (City); 20 million (megametropolis)	625000 (City)	470000 (City)
Main theme/domain	Nature-based treatment of contaminated water for reuse: food			
Types (strategic, civic, grassroots/organic)	Strategic - Organic	Strategic-Organic	Organic	Strategic-Organic
Funding scheme	Sustainable Urban Governance Initiative (SUGI)			
Convening Funders	Belmont Forum / JPI Europe			
National Funders	Start International USA			• InnovateUK
Budget (EUR)	63,000	76000,00	192,525	261,482
Duration	2 Years: 2020 - 2021 (ending Septem	3 Years (2018 - 2021) + staggered extension due to Covid-19		
Research Leads	University of Cape Town	University of Campinas	DRIFT	• University of Coventry
Associate Researchers	UCT Future Water Institute researche	Brazilian Agricultural Research Enterprise - EMBRAPA (2 units); University of Sao Paulo (dept. of Enviromental Management)		• University of Bath • University of Reading
Role of municipalities (promoter, enabler, partner)	Stellenbosch Municipalities - ULL lan	Sao Paulo City Secretary of Agriculture and Food Supply; Ibiuna City Secretary of Agriculture; Mogi-Mirim City Secretary of Agriculture (all enablers and partners); Sao Paulo State Secretary of Agriculture (promoter and partner); Sao Paulo State Infra-structure and Environment Secretary (partner); Sao Paulo State Environmental Regulatory Agency (CETESB, partner); Sao Paulo State Forest Institute (partner)		Enabler (arm's length)
Commercial partners (time given as 'contribution in kind')		• SABESP - Sao Paulo State Water	• BlueCityLab	• Wessex Water
Other funded partners				• Centre for Sustainable Energy (charity) •. Bristol Food Network (CIC)
Other main partners (actively involved)		Bloomberg Philanthropies "Ligue os Pontos" Project, at Sao Paulo City Agriculture Secretary (agroecological transition)		• Bristol Waste (Council-owned residential food waste management company) • Resource Futures (non-profit waste specialist consultancy)
Wider stakeholder groups		Agricultural Extensions Networks		• Energy providers
Citizen Engagement (co-creation, consultation, information, non-participation)	Langrug Community Forum (informal settlement)	Rural producers Sindicates: a) COPHIR , at Ibiuna City (rural small holders) ; b) CAISP, at Ibiuna City		Partial / Information-giving
Core Resource	• 1 x Co-I (part time); 2 x Post-graduate researchers	6 Co-I; 2 Post Doctoral Researchers; 3 Junior Researchers	• 1 x Co-I (part-time) • 1 x PhD	• 6 x Co-Is (part-time) • 1 x PhD

Additional Resource				
Purpose				
Main Aim / Vision / Rationale / Motivation	Determine the potential to use treated water to integrate the FEW nexus and identify multiple social and environmental benefits that are afforded by a decentralised ULL	To identify and reduce inefficiencies in each city's FEW nexus		
Key strategies	Development of Water Hub initiative: treat contaminated water from an informal settlement using nature-based solutions; reuse treated water for safe irrigation of vegetable crops and breeding fish; recover nutrients for fertiziling crop growth; use of renewable energy for the entire ULL operation; creating jobs, building local capacity and a motivation for supporting livelihoods	Development and diffusion of an sustainability-based decision-making tool for food production and commercialization at the Sao Paulo megametropolis area; Sustainable technology and organizational innovation search and selection.	Development and testing of 'Decision-Tree' Model	• Identification with partners of critical problem areas • Valuation of externalities and mainstream economic impacts • Development and testing of potential pathways to impact
Potential for change – types (trial, enclave, demo, platform)	Research, innovation and demonstration ULL	Trial, validation and diffusion of the decision-making tool	Enclave?	Demo?
Embedding, Scaling, Translating	Embedding and scaleable opportunity in design and approach	Embedding	Scaling-Translating?	Embedding?
Academic Methodologies	Scientific research: analysis of nature-based treatment through laboratory experiments, sampling, testing and innovation in monitoring; methods to determine risk assessment in reusing of treated water; laboratory analysis of quality of vegetables and impact on soil. Qualitative methods to understand social engagement and participation of local growers and marketing products in a urban poor, peri-urban context.	Common use and property natural resources governance institutional economics approach as a public choice theory essay: sustainability Multi-criteria Indicators framework-based tool for decision making. Methodologies: 1.Systems Dynamics Modeling of real world, based on 5 sustaianbility indicators and 2. Delphi (one round) application, in order to understant the sustainable set of practices expectations from multiple actors.		• Impact-oriented partner co-production • Socio-environmental valuation • Systems dynamics • Design thinking • Resource-flow modelling
Main deliverables	• Method and findings papers (systems, engagement, impact, valuation) • Impact Plan • Website • Knowledge brokerage "toolbox" • Education materials • Presentations			
Main outcomes sought (and its relation to sustainability challenges)	1. Clear, demonstrable understanding of the integration of Food-Energy-Water-Waste at the ULL. 2. Reliable treatment of water quality for safe reuse for irrigation of crops and support for freshwater fish. 3. Capacity building and job creation for small group of growers	Validation and diffusion of a decision making tool (support from Sao Paulo State Agricculture Secretary and partner municipalities)	Scaling of local circular economy entreprenial activity in BlueCity?	*(Identified through co-production)* Reduction in: • Residential food waste • Plastic in commercial food waste • Phosphorous
Theory of change - explicit in proposal?	No (ToC reliant on co-production approach)			

Types of top-level impact sought • **Instrumental - changes in policy/practice** • **Conceptual - awareness-raising** • **Capacity-building - Training** • **Attitudinal/cultural - willingness to engage** • **Enduring connectivity - legacy**	Instrumental: significant breakthrough in treating contaminated water from an informal settlement for safe reuse with the addition of chemicals and non-renewable energy; significant findings in the ability of NbS systems to trap / degrade nutrients and the entrapment of pollutants of emerging concern (PEC). NbS methods and designs within the FEW nexus can impact on practice in South Africa and the African continent - opportunities for			*Instrumental* (e.g. possible changes in policy/practice identified) *Conceptual* (partners and other stakeholders 'bought in')
Evidence produced	1. Scientific evidence on efficacy of NbS system for treating contaminated surface water. 2. Economic report on renewable energy and returns on yields	1. From SUGI Project objective 1.: Food, Water and Energy complex system modeling, based on 5 integrated sustainability indicators: Water footprint Index, Carbon		• Valuations • Possible pathways to societal impact
Theory of change - validated by partners?	Still in process: validation will be sought from the Langrug Community Forum and officials from the Stellenbosch (local) Municipality			Partially?
Evaluation and Outcomes				
Purpose of evaluation and main question(s)	Analysis of co-benefits and co-production of a decentralised FEW (and waste) nexus in a peri-urban area	Index of Decision-making tool diffusion (at validation phase): number of institutional users/year; Delphi foresight results discussions with policy makers (number of meetings).		
Summative, formative or interactive	Summative	All of them		
Data requirements	Quantitive and qualitative	Primary data produced from Complex System development and validation and Delphi application.		
Methods (interviews, surveys, observations)	Scientific investigation, analysis and interviews with participants	Delphi foresight tool development and validation (one round); System Dynamics modeling based on secondary data models and phyton modeling to feed the model.		
Timeframes	2 years	3 years		
Ethics				
Impacts				
Change processes • **Catalysed change** • **Little change**	Determination of NbS in the treatment of water for safe reuse; capacity building of young women in agriculture studies.			
Sustainable innovations • **Advanced at a small scale** • **Promising at a large scale** • **Advanced at a large scale** • **Feasible at a small scale**	Advancement in small scale experiments and enhancement of FEW nexus concept at this scale. Strongly embedded in SDGs (especially 6) and in grand challenges of resource recovery,	advanced and feasible at a small scale at this first phase of Sao Paulo ULL.		

Societal challenges: • **Addressed** • **Not addressed** • **Addressed selectively** • **Not fully addressed** ***Granularity of impact*** • **Specific changes in policy/practice** • **Sector specific** • **Executive/operational**		Not fully addressed with the short duration of the project. Potential for the ULL to be a catalyst that starts a circular economy in which the urban poor can enter the local market from sales of goods and services. Still to be determined. Qualification of this impact towards the end of the study.	Addressed	